Virginia Wildlife

DECEMBER 1972

VOLUME XXXIII / NUMBER 12

20 CENTS

Virginia Wildlife

Dedicated to the Conservation of Virginia's Wildlife and Related Natural Resources and to the Betterment of Outdoor Recreation in Virginia

Published by **VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES,** ***Richmond, Virginia 23230***

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DECEMBER

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Observations, conclusions and opinions expressed in *Virginia Wildlife* are those of the authors and do not necessarily reflect those of the members or staff of the Commission of Game and Inland Fisheries.

COVER: Redheads, a "no no" for duck hunters this year. Our artist: Kent Pendleton, Boulder, Colorado.

SUBSCRIPTIONS: One year, $2.00; three years, $5.00. Make check or money order payable to Treasurer of Virginia and send to Commission of Game and Inland Fisheries, P. O. Box 11104, Richmond, Virginia 23230.

VIRGINIA WILDLIFE is published monthly at Richmond, Virginia, by the Commission of Game and Inland Fisheries, 4010 W. Broad Street. All magazine subscriptions, change of address notices, and inquiries should be sent to Box 11104, Richmond, Va. 23230. The editorial office gratefully receives for publication news items, articles, photographs, and sketches of good quality which deal with Virginia's soils, water, forests, and wildlife. The Commission assumes no responsibility for unsolicited manuscripts and illustrative material. Credit is given on material published. Permission to reprint text material is granted provided credit is given the Virginia Commission of Game and Inland Fisheries and VIRGINIA WILDLIFE, but clearance also should be obtained from contributing free-lance writers, artists and photographers to reproduce their work.

Second-class postage paid at Richmond, Va.

GUEST EDITORIAL

The Real Thing

"THE Disposable Environment" was the text of an ad we saw recently. Sponsored by a large paper company, the ad sang the virtues of a disposable world we're supposed to inhabit "tomorrow" and how great it is going to be.

The bright new world depicted by the ad crowed about the youngster born into a world where everything would be cheap, utilitarian and disposable. Naturally much of it would be made of paper, from disposable paper diapers, to paper sheets, pillowcases, blankets, shirts, sleepers and training pants. Of course, we already have all those things. But we see predicted for us disposable furniture and even houses. Even a disposable automobile.

The idea has some appeal. Paper can be made from plant material which, if carefully nurtured, is a renewable resource. That's fine. But most of our thinking seldom goes beyond the products. Where and how are we going to dispose of all these things? That's a practical, down-to-earth problem for which we presently have no workable solution.

Oh, the techniques are here, but our life style hasn't accepted them yet. We take the goodies, but haven't yet faced up to paying the fiddler.

There is still another side to the disposable environment picture. We personally abhor the idea because we cling to old ways. We think good walnut gun stocks, and blued or brown steel barrels somehow have more worth than plastic stocks and glass barrels. We think an old leather wallet has more appeal than a fake ostrich skin wallet of plastic. We'd rather really ride a boat down a rapids than ride down a fake rapids at Six Flags.

Too many people today have been so debased by the disposable society and the ersatz society that they prefer the ersatz over the real thing.

In the National Geographic Society's *School Bulletin* for September, was an article about people photographing photographs of wild animals. Dan Saults, who used to edit the *Conservationist*, pointed out to the photographers that they could shoot pictures of the real thing on wildlife refuges. They weren't interested. One mentioned he didn't like dirt and insects.

Well, this attitude results from the ersatz-disposable environment. People can get so insulated from the real world that they shun real experiences. As Dan Saults put it: "How far some of us have drifted from nature's fold. I believe that exploration along wildlife trails can bring a thrill to life, a quiver of anticipation, a pride in some thing you've done yourself. There is room in the wilderness for danger, majesty and mystery."

For some of us, that may sum up what is important about the outdoors. We'd rather do it ourselves, Mom, than take someone else's experience. In the wild we can come face to face with nature, and ourselves . . . and God.—J.F.K.

By James F. Keefe, Editor, *The Conservationist*, Missouri Department of Conservation. Reprinted by permission.

LETTERS

Still Confused About Big Game Hunting Stamps

THE editor of *Virginia Wildlife* magazine, in response to a letter, tried to explain the section on "Damage Stamps" found in the Summary of Virginia Game Laws. To me this has always been questionable in meaning, and the editor left me even more confused. He stated that "The applicable statute permits certain counties to assess the $5.00 fee on nonresidents of the Commonwealth, not on nonresidents of the respective counties." I interpret this to mean that residents of the state of Virginia (Commonwealth) are exempt from paying $5.00 for a damage stamp. Is my interpretation correct, and, if so, do residents of Virginia still have to buy a $1.00 damage stamp to hunt bear and deer in Bath, Bland, Botetourt, Craig, Floyd, Grayson, Tazewell, Washington, Wise and Wythe counties, in addition to other licenses sold only by the clerks of those counties?

One other question: Last year (1971-72) I hunted in Bath County and so I purchased a $1.00 damage stamp from a local general store and was charged $1.35 for the damage stamp which, in the Summary of Virginia Game Laws, is listed as $1.00. I would like to know whether or not the clerks are allowed to add on a certain "handling charge" to the state-set price of the damage stamp. If so, it seems the hunters are certainly at the mercy of the clerks and what they tack on to the original price, and, if not, shouldn't this matter of charging a "handling fee" be looked into before hunters are charged a "handling fee" for other licenses required to hunt?

Dickie N. Powell
Fairfax

Residents of Virginia are exempt from the $5.00 fee, but if they hunt deer or bear in the counties you list (or in Giles, Highland, Patrick, Rockbridge or Smyth as well) they must buy $1.00 big game hunting stamps.

The Game Commission has nothing to do with the issuance of these stamps, which certain counties by special legislation are authorized to require and to sell. The stamps are priced at $1.00 each, except that Bath, Grayson, Smyth and Wythe Counties are permitted to charge nonresidents up to $5.00. Clerks of the circuit courts of the counties may designate other persons to sell the stamps, as agents, and apparently some persons also have bought blocks of the stamps for resale. We have had some other inquiries similar to yours which indicate that effective control may not always have been exercised over how much is added on to the basic price of the stamps by those who stock them "for the hunters' convenience."—Ed.

DECEMBER TURKEY SHOOT

By TOM RODGERS
Fredericksburg

ON a brisk December night standing close to a glowing fire is a man. In his right hand rests his favorite shotgun.

Before him stand other men also holding scatterguns of various makes and models. The leaping flames reflect the faces of many of his friends; some are new faces. But, tonight they all have one thing in common —an opportunity to participate in a turkey shoot.

In a cold and rough looking shelter just outside of town, the men begin to huddle around a small table each handing a dollar bill to the proprietor in return for a stub. This stub represents one chance on a turkey. A shooting match is in the making.

After everyone has bought a chance in the match, the shooters ready their weapons in great anticipation. The winner will have to shoot hard and straight, for competition at this match is said to be keen.

In the first window stands a man clad in a red-checkered jacket, dark gray slacks with a thick coat of dust atop his shoes. He tips his hat slightly forward as he eyes the tiny white targets downrange.

Before him stands a dimly lighted backstop some 28 yards away. The target runner is attaching to the backstop a small square of white paper consisting of nothing more than a narrow-lined cross.

A range worker calls out the number sequence and hands him a paper shotgun shell. There comes a shout from downrange to begin firing when ready. His attitude becomes tense to the clicking sounds of chambered shells and movement surrounding him.

Leaping flames reflect on the faces of men who, for lack of a better term, are called turkey shooters.

This is the prize—before processing, that is.

This man has come to shoot; he is a turkey shooter. We apply this name for lack of a better term. He is not actually shooting at or for a live turkey, but rather shooting in competition for a processed turkey that has been previously purchased at a local supermarket. Sometimes prizes include "store bought" hams, bacon, oysters and pork shoulders for variety and change of seasons. But the winner of this match will take home an eighteen-pound turkey.

Standing to his right are five other men, each taking careful aim at the non-moving squares of white. BOOM! Dust flies out of the backstop as the number four shooter opens the match with a charge of number 9 shot from his 36-inch smoke pole. It looked like a solid hit.

Back at window number one, tension mounts. His sweating palms grip the gun, and his eyes become jittery from sighting down the long shiny barrel. The firing line suddenly becomes still, and he lets go. BOOM! The frail target seems to disintegrate and floats gently to the frosted ground.

Breaking open his gun to eject the spent shell, he smiles inwardly and walks away with great confidence. Another shooter takes his place.

After the other fifteen participants have each fired

a single round, the target runner, who has been hiding behind a large tree, retrieves the tiny squares and brings them to the judging table.

Each target is laid out on the table and carefully eyeballed by the crowd. The man doing the judging shoves aside the poorly hit cards in a classic motion. Only the targets that look to be potential winners remain.

"It looks like a tie," says the judge. "We'll have a shoot off." He further proves his observation with the aid of a rusty set of dividers. No one disputes his judgment. He slowly flips over the winning cards.

The tying numbers are called off and the man in the red-checkered jacket will shoot once more. He and

Everyone has a chance to win. Here a youngster accepts his prize for a winning card.

his fellow competitor are each given a new target and fresh shell.

Excitement mounts and everyone gathers around to see the best gun win. Side bets of up to five dollars are placed and the shooters ready on the firing line.

The target runner hurries downrange and places the cards on the backstops, takes his concealed position and gives the go-ahead.

The man's rival, standing confident, fires first and the gun barks and smokes. The crowd remains motionless. Now it is his turn.

The results of a close match sometimes call for the use of dividers. Excitement mounts as everybody gathers around for the announcement, and side bets often are placed on tie match shoot-offs. Below, the card at right won this match, the cross having been cut by a single pellet.

He lays his gun down gently on the rough window's edge and grips the stock and forearm somewhat tighter than before. Everyone is silent, as he firmly squeezes the trigger. The gun kicks hard into his shoulder, and its report shatters the evening stillness. The smell of burnt gunpowder hangs heavy in the frosty night air.

Back at the scoring table, all eyes are fixed on the two cards as they are judged. This time there will be no tie, for the man in the red-checkered jacket has cut the cross with a single pellet and wins the match.

Until the late hours of the night, the shooting match goes on. Some win, but most lose at the shooting game that has been sounding against the Old Dominion landscape ever since Virginians started shooting shotguns and rifles.

At the evening's end, the man in the red-checkered jacket picks up his prize and heads for home. Such is life to a turkey shooter.

Operation Black Bear

By JACK W. RAYBOURNE
Game Research Biologist

VIRGINIA Game Commission personnel have begun two intensive studies designed to gather as much data as possible on the status of the black bear in Virginia. Presently, we must rely on past records and trends in the bear harvest to make many of our management decisions. These records do not supply information on such things as total bear populations, annual cub production, and the percentages of young and adult females in the population. This, and other information, is needed before we will be in a position to manage black bear effectively.

Bears, in comparison to deer and turkeys, are very difficult subjects for scientific study. For most of the year individual bears are either solitary or exist only in small groups, occasionally congregating at choice feeding spots. Most are wary of man, and they possess acute senses which enable them to avoid man. Black bear range in Virginia is typically rugged and remote, and bears can be highly mobile. These factors add greatly to the problem of gathering adequate biological information.

Until recently, bears could be aged in only one of three categories: cubs, yearlings, or adults. A new technique utilizing tooth sections is now available which enables biologists to age bears within fractions of a year of their true age. A microscopic count of annual growth layers within these sections indicates the bear's age in a manner similar to the way a forester might age a tree. The collection of adequate numbers of tooth samples can help fill much of the gap in our knowledge of the black bear.

The Game Commission has initiated two studies designed to collect these tooth samples and to gather other biological information. The first study, now in progress, is a live-trapping and tagging study. Commission personnel hope to live-trap a minimum of fifty black bears per year over the next three to five years. A variety of biological information is recorded on each animal including weight, body measurements, and reproductive condition. As a means of permanent identification, each bear handled has a numbered ear tag placed in each ear. A tattoo number will also be placed inside the upper lip. Tattooes may be invaluable since other studies have shown that 20% of male bears may lose both ear tags the first year. A tiny premolar tooth is removed from the upper jaw of live-trapped bears. Removal of the match-head sized tooth is not harmful to the bear. The development of a new drug and its antidote provides a wide margin of safety for the bear and, also, the "dentist."

Photo by Leonard Lee Rue III

Any volunteers to extract a tooth from this bruiser's jaw?

Two types of humane traps are utilized: the culvert trap and the Aldrich foot snare. The former consists of a large steel culvert equipped with a sliding door attached to a baited trigger. This type of trap is quite successful in capturing "nuisance" bears near cornfields, beehives, and dumps. The Aldrich foot snare is a new type trap which is adaptable to either baited or trail "sets." It consists of a short length of $^3/_{16}$″ aircraft cable and a trip mechanism. It is both humane and safe to handle. A child could step in the trap without injury and get out of it by simply loosening the loop.

A second study is designed to determine the age and sex structure of harvested bears. Beginning this fall, Virginia sportsmen will be able to participate directly in this study. Successful bear hunters are asked to cooperate in determining their bear's age by furnishing the Game Commission with a portion of the lower jaw. Biologists will remove one of the large canine teeth from the jaw portion by boiling, and the tooth will be processed for aging. The large canine teeth actually are preferred for aging, although only the small upper premolar is taken from live-trapped bears so as not to harm the animals.

Special prepaid mailing envelopes with instructions for removing and mailing the jaw portions are available from most big game checking stations, game wardens, game managers, and taxidermy shops in the bear range. The small jaw portion can be sawed off with a plain handsaw. A taxidermist can do this for a hunter who wishes to have the bear mounted or its skin tanned. If mailing envelopes cannot be found, or other problems arise, hunters can call a toll-free telephone number and arrangements are made for one of our personnel to contact the hunter personally. Posters containing all necessary information are displayed in area big game checking stations and taxidermy shops. Each hunter is notified of his bear's age as soon as the teeth are processed.

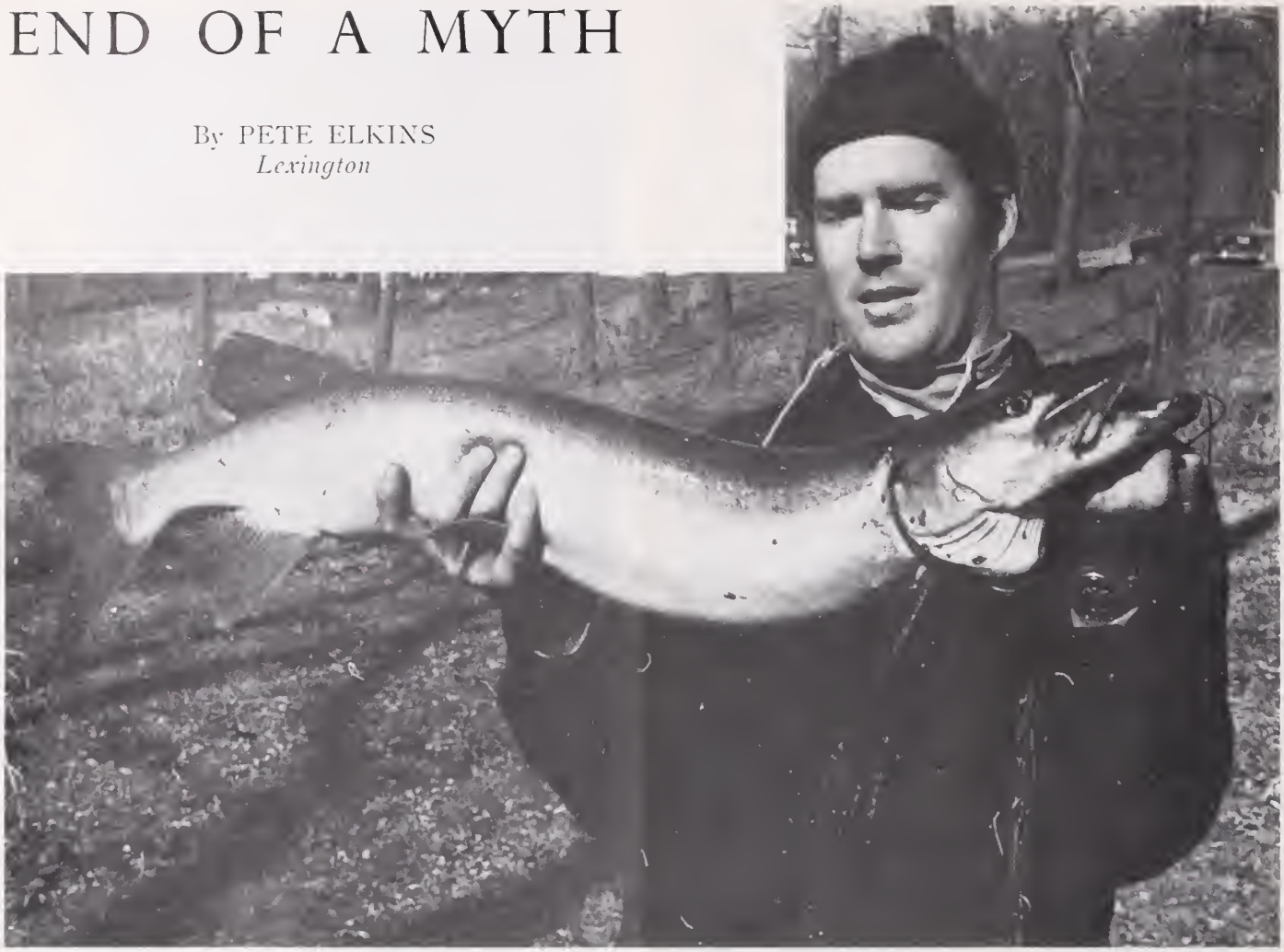
Biologists hope to collect at least 200 bear jaws from state-wide bear hunters this fall. Contacts have been made with a number of hunting clubs, individual hunters, and outdoor sports writers to outline plans for the studies and to stress the need for participation. A dozen or so jaws per year will *not* give us the information we desperately need to measure the "health" of Virginia's black bear population. We are appealing to all successful bear hunters to send us the jaws, or to contact one of our personnel. The information derived should go a long way toward providing adequate management information to insure the continued enjoyment of hunting this "king" of Virginia game animals.

1972 was an unusual year for bears showing up in the wrong places, such as in Waynesboro and Crozet residential districts. Above, a treed cub that accompanied an adult female and another youngster into Crozet squalls for mother, and author Jack Raybourne aims a tranquilizer gun to bring him down. Below, County Deputy W. E. Morrison, wet from a splashing he got during a brief wrestling match which ensued when the cub fell into a creek, bears the groggy but conscious bruin to a waiting vehicle. All three bears were subdued and released unharmed in the Blue Ridge mountains.

Garvey Winegar photos

END OF A MYTH

By PETE ELKINS
Lexington



The author's James River muskie was forty inches long.

"MUSKIES are a myth," Barker Stein muttered in disgust.

After nearly three hours of casting along the snag-lined shore of the James River between Buchanan and Springwood, I was in complete agreement with Barker's words. The muskellunge, or simply muskie, is a fish of legend, renowned as the supreme prize of fresh water, and surrounded by an aura that turns a casual fisherman into a muskie maniac.

It was the 26th of January and properly cold. Barker and I finally found the inaction and the cold too much to bear. As we turned toward the shore at River's Bend fishing camp, operated by Mr. and Mrs. Fred Smith of Roanoke, my thoughts were of the muskies that were still in the river.

The muskellunge isn't a native to Virginia waters, but a highly successful stocking program has begun to pay off. Muskies were first stocked in the Botetourt County section of the James in 1967 as ten-inch juveniles. In 1970, six-to-ten pound fish began to belt fishermen's lures. The fastest action was in the Buchanan to Springwood section of the river. February and March continue to be the magic months.

In 1970, there were 65 entries in the muskie category of Virginia's freshwater fish Citation program. To be eligible, a muskie must weigh at least six pounds. The minimum legal size is 26 inches long. By 1971, the number of entries had expanded to 76. The James is not the only body of water harboring these spectacular fish.

Smith Mountain Lake is the place for really big muskies. The current state record, a 29 pounder, was wrestled from the lake's cold waters. Other waters with a significant muskellunge population include Claytor Lake, Burke Lake, Lake Brittle and the South Fork of the Shenandoah.

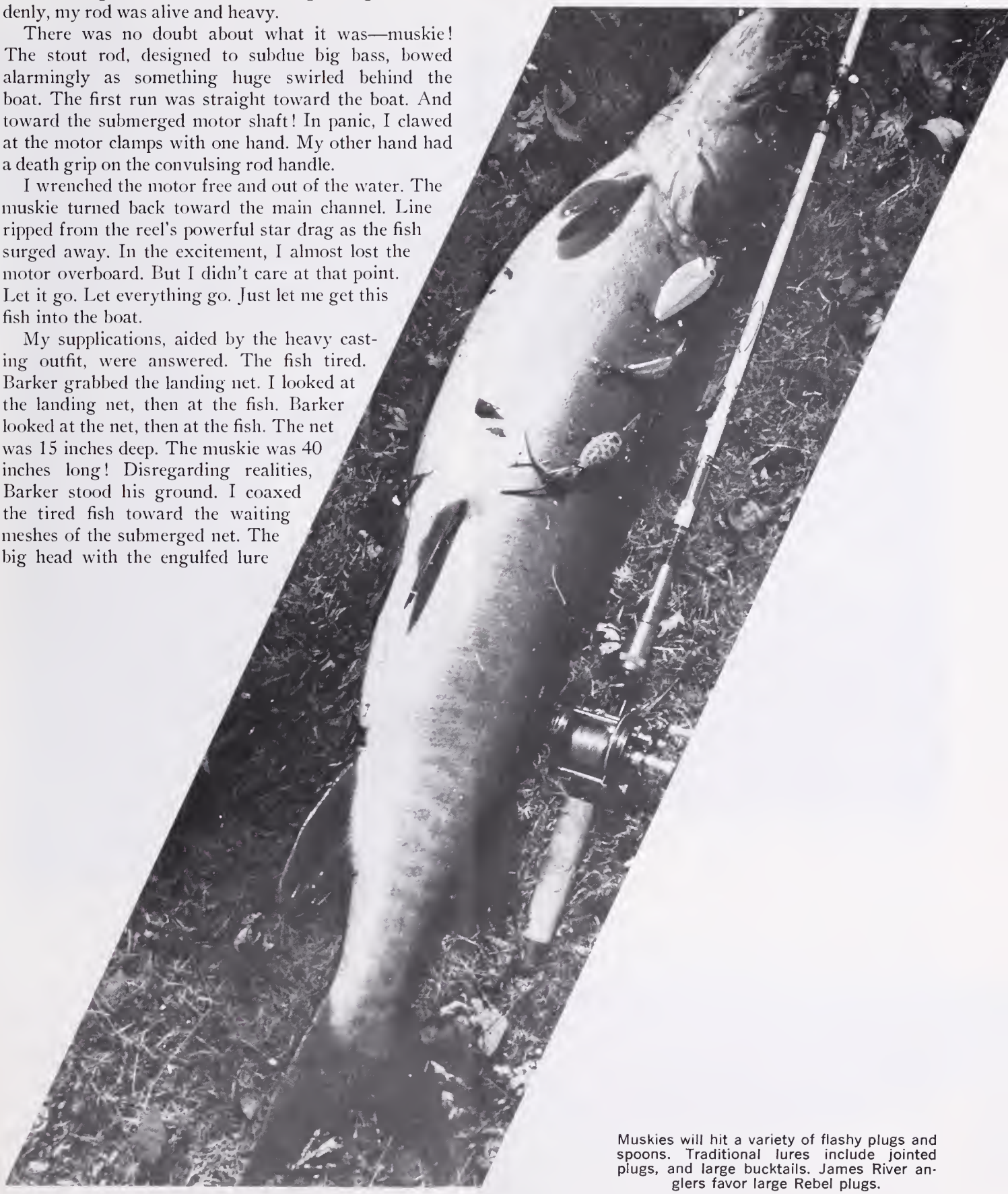
As our johnboat turned out of the main current, I couldn't resist one last effort before calling it a day. The johnboat nosed past a tangled mass of drowned brush and limbs. I turned slowly to the right to swing the lure, swimming forty feet behind, close against the tangled cover. Barker reeled in his lure in preparation

for beaching the boat and unloading our gear. Suddenly, my rod was alive and heavy.

There was no doubt about what it was—muskie! The stout rod, designed to subdue big bass, bowed alarmingly as something huge swirled behind the boat. The first run was straight toward the boat. And toward the submerged motor shaft! In panic, I clawed at the motor clamps with one hand. My other hand had a death grip on the convulsing rod handle.

I wrenched the motor free and out of the water. The muskie turned back toward the main channel. Line ripped from the reel's powerful star drag as the fish surged away. In the excitement, I almost lost the motor overboard. But I didn't care at that point. Let it go. Let everything go. Just let me get this fish into the boat.

My supplications, aided by the heavy casting outfit, were answered. The fish tired. Barker grabbed the landing net. I looked at the landing net, then at the fish. Barker looked at the net, then at the fish. The net was 15 inches deep. The muskie was 40 inches long! Disregarding realities, Barker stood his ground. I coaxed the tired fish toward the waiting meshes of the submerged net. The big head with the engulfed lure



Muskies will hit a variety of flashy plugs and spoons. Traditional lures include jointed plugs, and large bucktails. James River anglers favor large Rebel plugs.

 (Continued from page 9)

went in. Then four more inches of muskie and the muskie's snout hit the bottom of the net. Barker heaved in a wild flurry of water and fins. I jumped on the fish inside the boat and the battle was over.

The great fish, thick-heavy on the cold bottom of the johnboat, glistened in the noonday sun. After everything that I had read about the fish, the moment seemed timeless and unreal.

I knew that muskellunge were the largest member of the pike family, sometimes reaching the awesome fifty-to-sixty pound class. But I hadn't known how large one looked on a cold January morning in Virginia. I ran my hand over the lower half of the cheek and gill cover. All the books had been right—there were no scales there. Lesser members of the *Esox* family, the northern pike and chain pickerel, have a fully scaled lower cheek and gill cover. Muskies are solitary fish, except during the spawning season when the water temperature is in the 48° to 55° range. Generally, larger muskies are females.

Landing a muskellunge requires a large, deep net. The author and fishing partner, Barker Stein, found this net on the small side.

The giant size of the muskellunge, backed by brute strength and capriciousness, is the stuff of which muskie addicts are made. Hooked muskie fishermen gladly cast a large jointed plug or bucktail all day long, day after day just for those wild moments that follow the ferocious strike. The muskellunge is a trophy fish, which means that it must usually be earned through long hours of persistence. As a food fish, the muskie leaves much to be desired, but that's as it should be.

To my regret, I kept my first muskie, turning a magnificent fish into a pile of aluminum packages in a freezer. That will never happen again. Other fish taste far, far better, yet none can match the excitement generated by *Esox masquinongy*. If you like to eat fish, stick with the crappies, sunfish, bass, and other more numerous species. Save the muskie for something else. Unless you plan to have a trophy muskie mounted, use a deep-bagged landing net to handle a spent muskie. If you use a gaff and want to release the muskellunge to fight again some other magic morning, gaff the fish carefully in the bottom of the jaw. Use long-nose pliers to remove the hooks, take a few pictures, and gently return the muskie to his home.

Barker Stein hefts a muskie from the upper James River near Buchanan, one of Virginia's most productive muskellunge areas so far.

After catching one muskie, some people are hooked forever. Not me, though. If you'd like to know more about muskies, you can find me on the James casting a big silver Rebel. I'll be there tomorrow and the next day, and the next, and the next, and. . . .

URBANIZATION: Menace to Fishermen

Silting basins, while helpful, seldom if ever are adequate for siltation elimination where housing construction is in progress.

By RAYMOND V. CORNING
Fish Management Field Coordinator

Photos and Artwork by the Author

FORMER haunts of the chain pickerel and red breast sunfish suddenly transformed into heavily eroded ditches with only a few rapidly drying pools of water (except immediately after storms—when stream courses become raging torrents); the place where you once caught that cherished eight pound bass transformed into dry land; cement lined ditches where smallmouth bass were once common; and no place to fish within an hour's drive of home. Sounds like a nightmare, doesn't it! But as much of a nightmare as it may seem, it is the predictable future for the Coastal Plain of Virginia and for many more rapidly expanding population centers of the United States if current trends continue.

Virginia now has a population of about 5,501,967. A population of 7,220,000 is expected for Virginia by the year 2000 (only 28 years away), or about 1⅓ times the current population. The above figures reflect what is anticipated in many other parts of the nation. The national population will rise from the current level of about 211,413,400 to approximately 300,789,000 by the year 2000. This rate of increase is only 3 percent less than that predicted for Virginia.

Over 63 percent of the existing population of Virginia, or more than 3,479,000 people, is concentrated on 27.6 percent of the land mass bordering the coast. Projections indicate this number will be just about 1½ times as large by the year 2000. To help visualize the magnitude of predicted change for the coastal region, this would mean that about the same number of people as now reside in the entire Commonwealth of Virginia will be concentrated along the coast in the year 2000. By that time, over 70 percent of the population of Virginia will be concentrated along the coast. Obviously, over the next 28 years rural areas of the coastal region will change from rural to urban areas. The unequal growth-rate pattern is shared by all states, although in a number of states unequal growth is not as marked.

What does this population increase mean to the rapidly increasing number of potential and existing fishermen of the affected regions? Utter chaos can be anticipated unless many existing laws, regulations and ordinances are reinforced, modified or supplemented.

Sedimentation and water fluctuation are two highly detrimental by-products of urbanization, where fishermen and nature enthusiasts are concerned. Yet, existing control measures do little to prevent sediment movement and excessive water fluctuations. Initial steps towards effective control have been taken in Virginia with the introduction of Senate Bill No. 364. This bill, which proposed an erosion and sediment control law, was nevertheless tabled by the last General Assembly. However, the bill is being carried over to the 1972-1973 assembly for further consideration.

Maryland has already enacted a number of effective preventative laws and ordinances for sediment control, as have several other states. On the other hand, the overall effects of water fluctuation are still relatively unknown. Water fluctuation control measures throughout the nation are either ineffective or non-existent as

(Continued on page 14)

Channelized streams usually offer no productive habitat for harvestable fish species.

Game, Education and Law Enforcement Personnel Receive Awards

Commission's Game Division Chief, R. H. Cross, Jr., receives from State Secretary of Commerce and Resources Maurice B. Rowe his trophy as winner of the Governor's Award as State Conservationist of the Year, "for outstanding overall conservation effort and achievement and most significant contribution to the cause of conservation." Cross' citation emphasized his achievements in the acquisition and management of the Commission's Wildlife Management Areas throughout the State.

Game Commission photos by Kesteloo

Commission Information Officer Harry L. Gillam receives from State Secretary of Commerce and Resources Maurice B. Rowe his trophy as winner of the annual Conservation Communications, of the Year Award, for "accomplishing the most in creating a public awareness of the importance of natural resource conservation." He was especially cited for his achievements in preparing and distributing the Commission's informational and educational publications.

"Dick" Cross' and Harry Gillam's awards were presented at the annual Virginia Wildlife Federation's Awards Banquet, at the Hotel Governor Dinwiddie, Portsmouth, October 21, culminating the year's Governor's Conservation Achievement Program. The program is sponsored jointly by the Virginia Wildlife Federation, the National Wildlife Federation and the Sears, Roebuck Foundation. The Governor's Award, top honor, is presented to the State Conservationist of the Year. Other winners were: The Honorable G. William Whitehurst, Legislative Conservationist of the Year; Franklin D. Colyer, Sr., Wildlife Conservationist of the Year; Wesley W. Naff, Sr., Soil Conservationist of the Year; Robert T. Dennis, Water Conservationist of the Year; James Howe "Bud" Johnson, Forest Conservationist of the Year; Dr. Burd S. McGinnes, Conservation Educator of the Year; Mrs. L. W. Eli, Cadette Girl Scout Troop 284, Youth Conservationist of the Year; and Charlottesville-Albemarle League of Women Voters, Conservation Organization of the Year.

Southeastern States outstanding game and fish law enforcement officers receive awards at 1972 convention of the Southeastern Association of Game and Fish Commissioners at Knoxville, Tennessee. Standing, second from left, is Virginia's Warden of the Year, Charles R. Chappell.

VIRGINIA WILDLIFE ☆ ☆ ☆ ☆

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

RECORD NUMBER APPLY FOR STATE WATERFOWL BLINDS. A record total of 1,554 persons applied for blind permits on the Game Commission's four regulated waterfowl hunting areas prior to the drawing for hunt date assignments this year. Computer selected random numbers were used this year for the first time to determine the order in which applicant requests would be considered rather than the mechanical drawing process used in past years. The areas can provide waterfowl hunting for up to 2,771 hunters during the season.

The largest number of applicants, 615 total, sought blind reservations on Hog Island Waterfowl Management Area, open this year for the first time. There were only 85 slots available since shooting is restricted to two days per week. Some dates remain at the Trojan area and may be reserved on a first-come first-served basis. Hunters must furnish boat and decoys on that area. Hunters may also stand by at other area headquarters on hunt days in case cancellations occur or may contact Pocahontas Trojan Headquarters, Phone 426-6320, in advance to see if any cancellations have been received by mail.

ROCKBRIDGE FISHING LAKE OPENED. The Game Commission's 31-acre A. Willis Robertson Lake in Rockbridge County was opened to public angling October 21 in spite of the fact that adjacent recreational facilities were not yet complete. Rockbridge County has encountered unexpected delays in completing the county park complex surrounding the lake which will ultimately include a campground, picnic area, marina and hiking trails. Thus, opening day anglers found no facilities, not even rest-rooms.

The lake was stocked with adult fish salvaged from another lake that was drained in 1971. Bass, bluegills and channel cats were stocked. Since the fish were put in as adults rather than fry, anglers found a variety of fish sizes rather than the homogenous 12-15 inch year class usually caught on opening day at other lakes. There is a 12 inch size limit on the bass and a daily creel limit of 5.

The lake is located 9 miles west of Lexington near the town of Alpin off Route 251. Route 651 out of Alpin leads to the access road and boat ramp. Although rental boats and bait are to be available at the lake eventually, they were not ready in the 1972 season so anglers will have to bring their own equipment and supplies. The boat ramp is complete so private boats can be launched. As on all Game Commission lakes, gasoline motors are prohibited but anglers may use electrics.

Lake Willis Robertson was a multi-recreational project financed by a combination of Land and Water Conservation and Commission funds. It includes 538 acres of adjoining recreational land yet to be developed.

EASTERN DEER MAKE CLEAN SWEEP OF STATE TROPHY CONTEST. A 15-point rack from Buckingham County entered by Richmonder E. J. Williams far outclassed other deer heads entered in the 1972 Big Game Trophy Contest in Harrisonburg October 21 with a score of 251-7/16. The head, which will rank fourth in all-time standings for the contest, was one of only two that exceeded 200 points in the top class. This was the first time in many years that all heads in the top class did not beat 200 points. Scores in other classes ran more nearly normal.

The winner in the 7-8 point class was an 8 pointer from Prince George County which scored 187-7/8, nailing down top spot for Ernest Wagner of Petersburg. In the 6 point class, C. W. P. Naquin of Arlington won the first place trophy with a 6 point rack from Essex County which scored 141-5/8. Each of these latter two rank fifth in their respective class in the all-time contest records. Eugene Miller of Edinburg placed second in the top class with a 12 point Shenandoah County buck scoring 200-6/8 points.

Bowhunter D. C. Holtz of Woodbridge took top honors in the archery class with a 6 point buck bagged in Essex County which scored 178-2/8, making it the 7th largest ever entered in this class. A 450 pound bear entered by Edward S. Madison of Grottoes won the Bear Division with a score of 29-5/8, ranking it as the state's 4th largest bear. The big bruin was bagged in Rockingham County.

 (Continued from page 11)

far as protection of aquatic life is concerned.

You may be wondering why fishermen should be directly concerned with sediment movement and water fluctuation. Both sediment movement and water fluctuation can severely limit or eliminate fish and other forms of aquatic life, and both are common hazards of urbanization.

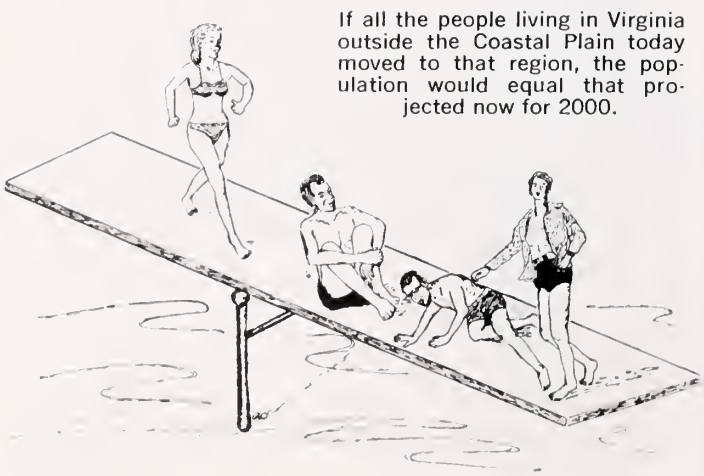
Numerous streams and ponds are scattered along the Coastal Plain, just as they are to be found inland. These, if unaffected by urbanization, will provide substantial enjoyment for fishermen and other water enthusiasts. They will assist substantially in meeting future recreational demands. Experience in Fairfax County, the fastest growing county of Virginia over the past 20 years, however, leads to the inescapable conclusion that streams and ponds will be drastically altered.

The almost imperceptible accumulations of sediment in old ponds will change to rapid accumulations, with increases readily visible from day to day. And, as long as trends continue, urbanization will reduce many new ponds to potholes in a matter of a few short years.

Streams of the rapidly developing Coastal zone are threatened in much the same manner. The numerous streams of the region can easily be transposed into look-alikes of Accotink Creek (a continuously muddy and wildly fluctuating stream in Fairfax County).

Under existing laws and ordinances, aquatic life of the Coastal streams and ponds is doomed to replacement by more hardy but less desirable species, or to being greatly reduced in quantity. This means in a number of instances a change from chain pickerel waters to sucker streams and from largemouth bass waters to carp dominated waters.

Removal of terrestrial vegetation which traps and slows water movement produces greatly modified run-off patterns when replaced by asphalt, cement and buildings. Water which formerly required days and weeks to pass downstream may pass in a matter of a few hours after urbanization. Infiltration of storm run-off into the soil, a means by which ground-water tables are maintained, may be reduced or eliminated by coatings of asphalt and other impervious material common to urban communities. Overland water flow may also be speeded up so much that significant infiltration into the soil cannot occur. Flows carried by streams immediately after storm events may be increased by shortened water retention capacities of surrounding lands, and by waters that formerly entered groundwater tables. This helps to explain the previous reference to former chain pickerel streams being turned into raging tempests. Rapid run-off of storm waters can turn even the most placid-looking stream into a stormy cauldron capable of great violence and displays of power.



If all the people living in Virginia outside the Coastal Plain today moved to that region, the population would equal that projected now for 2000.

Figure 1. Virginia's Coastal Plain population growth projection, 1972-2000.

Stream flow during dry periods is normally maintained by the slow release of storm waters (water movement slowed by vegetation and other absorbent materials overlying the soil), and by ground-water discharges into streams. Since both water retention and ground-water recharge capabilities are reduced following urbanization, dry-period stream flows are also reduced. Without a continuous source of water, affected streams would obviously dry up until only intermittent pools, devoid of game fish, remained or until storms again produced raging torrents.

As a factual example of the problems associated with urbanization, the change from rural to urban condi-

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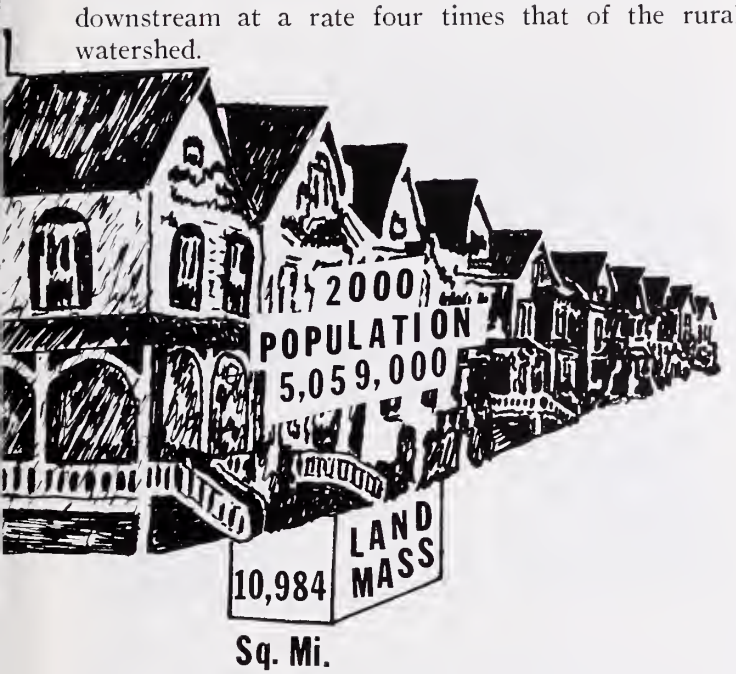
tions greatly increased the volume of storm run-off in streams of Long Island, New York (by as much as five-fold). Flood peaks also became markedly higher and flood crests were reached more quickly.

In another study, flood peaks and run-off rates varied widely between an urban and an adjacent rural watershed. Flood peaks increased approximately three-fold in the urban watershed and storm run-off passed downstream at a rate four times that of the rural watershed.



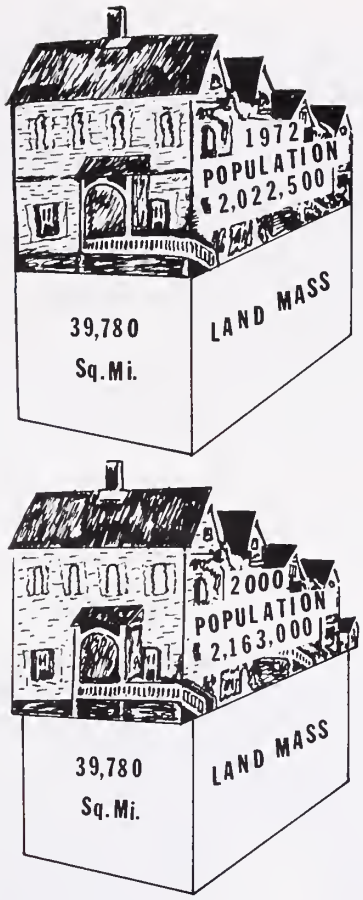


Figure 2. Virginia's population growth projection **exclusive** of the Coastal Plain region, 1972-2000.

Sediment movement results from many of the factors producing water fluctuations, but the greatest movement of sediment occurs during the actual processes of urbanization. Just how much sediment movement can be expected as a result of urban development and what are the major causes of sediment movement? Road and building construction contribute the greatest amounts of sediment to inland waterways.

Studies carried out in Fairfax County, Virginia, indicated that for every square mile of a portion of Accotink Creek drainage undergoing housing construction, approximately 117 tons of sediment was transported per acre foot of storm run-off (water one foot deep over an acre of land). Normally, in the Fairfax region precipitation averages around 44 inches, or 3.8 feet, per year.

While total quantities of sediment released from construction areas dwindle rapidly after construction operations cease, tremendous quantities of material are obviously eroded and transported by run-off waters during construction phases. Highway construction, especially multi-lane, also causes much erosion and movement of sediment.

A three-year study was carried out by members of the U.S. Geological Survey in order to determine the amount of sediment movement resulting from construction of the four-lane highway leading to Dulles International Airport (Washington, D.C.'s major air terminal). It was concluded that during the three-year period 85 percent of the sediment transported by nearby Scott Run was derived from road construction areas. Gross erosion from highway construction was placed at approximately 126 tons of sediment per acre of roadway (approximately 50,000 miles of roads now exist in Virginia). About one half of the eroded sediment was deposited on land while the other one half was transported downstream by Scott Run.

Authors of the Scott Run Survey report also estimated that the sediment yield from road construction was about 10 times that normally released from cultivated lands, 200 times greater than from grasslands, and 2,000 times greater than that from forested lands. Recent changes in practices of the State Highway Commission have reduced sediment movement resulting from highway construction. Yet, levels are still inordinately high and can only be lowered through a program of vigorous research.

Just why is sediment movement and water fluctuation a threat to fish and other forms of pond, reservoir and stream life? Unfortunately, in-depth studies have yet to be carried out regarding the exact mechanisms and the extent to which these mechanisms produce adverse effects during sediment movement and water

 (Continued from page 15)

fluctuation. Only educated guesses based on partial studies can be made. It is obvious that both processes produce physical changes directly, chemical changes directly and indirectly, and biological changes indirectly.

Most forms of life in streams can withstand short-term flooding due to urbanizing processes as long as sufficient obstructions exist in stream channels to provide shelter and as long as stream-bed materials are relatively stable. However, stream life cannot withstand marked fluctuations in stream flow and the myriad effects produced by low water stages.

With reduced flows, stream velocities drop rapidly. Volume and cross-sectional areas, or an end view of the stream if suddenly sectioned, are the next most affected, followed by average depths, stream widths (reflected by wetted perimeter of the water surface), and maximum depth.

Many stream-inhabiting insects require stream velocities of a rather narrow range. When velocities recede as flows diminish, these organisms perish. Others, such as web-building caddis flies, depend on stream currents to assist them in trapping food. Should stream velocities drop too low, food no longer could be trapped.

Fluctuating portions of streams can only be inhabited by organisms capable of moving about or of withstanding intermittent periods without water. Aquatic plants are often eliminated, for this reason, when streams change from stable to unstable conditions.

It should be obvious that the dire predictions set forth at the start of this article have a ring of truth in them, and that only action on the part of concerned fishermen and other advocates of a quality outdoor environment can keep the dire predictions from becoming a reality.

Enactment of stiff ordinances and zealous enforcement of ordinances (by counties, with overall supervision and responsibility vested in the state) is badly needed both in urban and rural communities to prevent sediment movement from ever beginning. Widespread recognition of the fact that the covering of vegetated lands with asphalt, cement, and buildings brings about vast changes in water run-off patterns is also necessary, along with coordinated research into means for maintaining normal stream patterns and water clarities during and after urbanization. Research alone, however, is valueless without a legal framework for putting favorable findings into practice and for restricting practices found to be damaging and unwarranted.

Left: Housing construction development has an obvious ill effect on any nearby downstream fishery. Above: A fine fishing stream upstream from the construction shown at left. Below: The silt-laden runoff from the construction at left enters the stream shown above.

The above statements lead to a now well-known cliché for discussing most emergency situations: An expenditure of much energy by numerous people, organizations and agencies, and substantial financial outlays are necessary if the march of time is to proceed in the desired direction.

IN
NATURE'S
GARDEN

Christmas Plants

By ELIZABETH MURRAY
Charlottesville

Illustrated by Lucile Walton

THE custom of decorating with evergreens at Christmas comes from many diverse and far away places, from Christian, pre-Christian and pagan cultures. Centuries ago, Jewish communities used boughs of trees to adorn the booths which they set up each autumn for the "Feast of the Tabernacles." The Romans exchanged green branches with their friends at the turn of the year for good luck. In ancient Britain the cutting of mistletoe every winter was an important and elaborate rite. The head Druid went out into the woods with a golden sickle kept only for this purpose. When he reached the chosen oak tree, he had to climb it to cut the mistletoe, which he then dopped into a sheet held out by a group of special maidens. The plant was divided up and a small piece hung over each person's door for its protective and curative properties.

Leaders of the early Christian church were dubious about permitting customs which had heathen associations. Some sects banned altogether the use of fresh plants in their churches. In some Protestant churches of Polynesia today, fresh flowers are still forbidden, a relic of the strict rules of the London Missionary Society which first brought Christianity to the islands. During funerals, coffins are adorned with rather dreadful plastic flowers. But in most places church leaders bent their principles in the face of traditions which were so obviously important to the people, and green plants were gradually allowed back into the places of worship, and homes.

Here in Virginia we have an abundance of greenery in the woods in December, and most Virginians are enthusiastic Christmas decorators. Some of the plants we use are steeped in ancient tradition, holly, ivy, mistletoe; and some have no particular historical significance but are just plain beautiful.

The familiar holly tree found up and down the eastern United States is *Ilex opaca,* the American holly, belonging to the holly family or Aquifoliaceae. The trees are dioecious; that is, the flowers are of two types, male and female, and occur on different trees. Only the female trees have the red berries so prized as Christmas decorations. The American holly can grow into a big tree up to 90 feet high. The leaves are shiny and evergreen. They are shed mostly in the springtime and early summer, but at no time is the tree completely without foliage. There is another smaller evergreen holly found in the southeastern part of the state with the unattractive name *Ilex vomitoria,* so called for the strongly emetic and purgative properties of its leaves. However, it is attractive to *look* at, with less spiny leaves than the American holly and clusters of brilliant red berries. It is known commonly as the yaupon and is also used for decoration. There are several species of deciduous holly in the state. These drop their leaves in winter, but still have attractive and often very large red berries which make good additions to Christmas garlands.

There are innumerable legends about the origin of the first Christmas tree. One of the simplest and most appealing tells the story of the date palm, the olive and the pine tree, all of which went to the stable at Bethlehem to pay their respects to the Christ-child. The date and the olive presented their fruits as gifts but the pine tree felt it had nothing to give. Noting its embarrassment, some stars descended from the sky and arranged themselves in the pine tree's branches—and there was the first Christmas tree. The idea of having a decorated evergreen tree at Christmas certainly came into this country with the earliest European settlers and is almost certainly here to stay! In Virginia there is plenty of choice about what kind of tree to have. The three main native trees which are used are the white pine, *Pinus Strobus,* more common in the southwestern part of the state, the Virginia pine, *Pinus virginiana,* particularly in the southeast and coastal plain, and the red cedar or juniper, *Juniperus virginiana,* especially in northern Virginia. However, the Scotch pine, a native of Europe but very prosperous in this climate, is also grown here for Christmas trees. Many Christmas trees come from the thinnings of plantations of conifers which are otherwise being grown for lumber or pulp wood. They are not always symmetrical when grown under crowded conditions, but both retailers and consumers do a good deal of picking and choosing to get the best-looking ones. Many other species are brought into the state from further north. Shipments of spruce come down from Canada. The trees are cut earlier in the year for lumber, their tops are preserved in cold storage and then sent south at the end of the year.

In my home in England we did not have many family traditions at Christmas. We always had a good time, but we did not have a lot of rituals about which we all felt very strongly and which were scrupulously carried out year after year. We did not necessarily always have a Christmas tree. I was therefore surprised at myself after I grew up and started to plan Christmas in my new home in Virginia to remember something about which I did feel very strongly. This was that *my*

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Christmas tree must have *roots.* I cannot bear to see those cast-off trees lying forlornly outside everyone's door in January. I'm not even very keen on seeing them piled up, ready to be sold in December, even if I know that they have been culled in the best interests of forest management. Our Christmas trees are smaller than most people's but appreciated, I'm sure, quite equally. We dig them up in the woods, usually white pines but sometimes an eastern hemlock, *Tsuga canadensis;* then we have the great pleasure of replanting them outside

A composite arrangement of four species of Christmas plants.

after Christmas and watching them grow up over the years.

The pagan associations of mistletoe still linger on, and it is not usually brought into churches. The Norse god Balder was killed by an arrow made from mistletoe because it was the one plant his mother forgot about when she requested every other growing thing not to harm him. His mother later forgave the mistletoe, so it was partially redeemed, and nowadays people bring it into their homes for good luck just as the Celtic families did in ancient Britain. Besides general good luck, of course, it endows the place over which it hangs with special dispensation such that any man may embrace any lady he catches there. Mistletoe is a partial parasite growing mainly on oaks and persimmons. It does possess green leaves but also obtains nourishment by sending sucking organs or *haustoria* into the host tree. The white berries are sticky and adhere to the bills of birds, thus helping to effect the plant's dispersal.

In addition to the traditional greenery which is also used in many other parts of the world at Christmas, we have some plants in Virginia which have no special Yuletide significance but make lovely decorations. The leaves of *Galax aphylla,* wandflower or beetleweed, are shiny and water resistant and stay green all winter, even after picking. When we were in England, some North Carolina friends sent us a box of Galax leaves instead of a Christmas card. I arranged them in a fan design and stuck them up over the fireplace of our 400-year-old English farmhouse in Oxfordshire. There they stayed for a year, looking most attractive and reminding us delightfully of the Appalachians. Galax belongs in a strange little family called the Diapensiaceae, tucked in between the heaths and the primroses. It is widespread throughout the open woods of the southern Appalachians and has a tall spike of little white flowers which bloom in early summer.

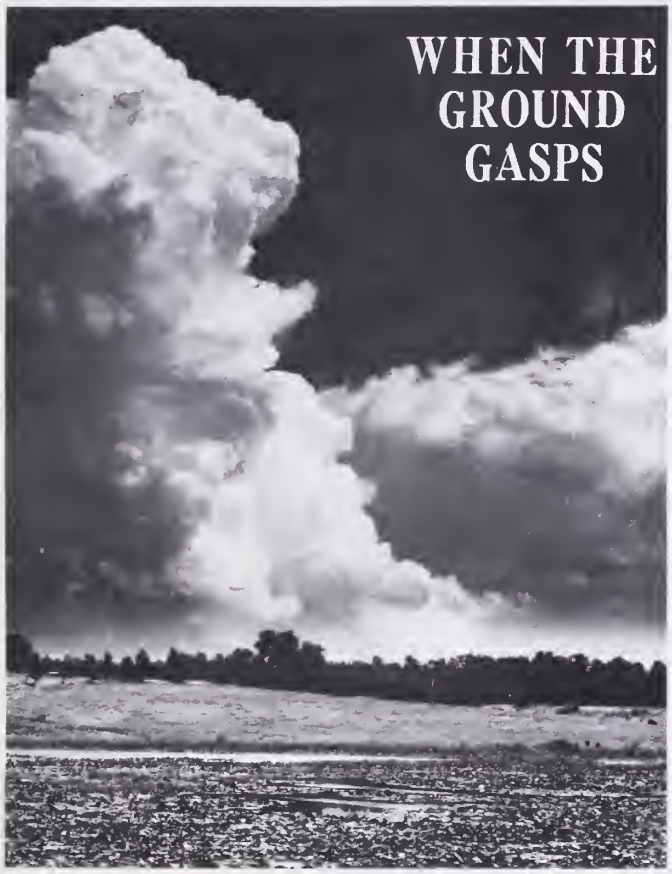
No mantlepiece here is complete in December without a strand of running cedar trailing across it. *Lycopodium complanatum,* known variously as running cedar or evergreen, trailing evergreen, ground pine, ground cedar, Christmas green, creeping Jenny and in Quebec as Courants Verts, belongs to the Lycopodiaceae or club-moss family, a primitive group of Pteridophytes (ferns and their allies). Running cedar has a trailing stem with perpendicular branches densely covered with small leaves. The fruiting bodies are borne at the tips of longer stems, hence the family name of club-moss. There are many varieties of running cedar and some of the finer points of its taxomony are rather confused. But there is no need to worry about classification when collecting it for the house. All the varieties are pretty, and it is found in large patches throughout the woods and thickets of the state.

Because of its long, flexible stem, running cedar is a popular plant for Christmas wreaths. So, of course, is ivy. The custom of hanging up wreaths is widespread in the South and nowadays merely seems to indicate that people within wish well to all the people without. Wreath-making in Virginia has reached an advanced state of craftsmanship and uses all kinds of materials. Perhaps the prettiest ones are those made out of natural twining greenery and studded with cones and seedpods which, if not actually native to the state, at least grow here now!

So in December we have a special reason for keeping an eye open for attractive greenery in the woods. Our own decorations will not be elaborate, but they will be enthusiastically gathered. We anticipate that they will help to make the occasion a good one—as we hope it will also be for everyone else.

"IN the health of our soils lies the health of mankind. When the soil base of our natural systems is slowed down, when the natural vigor and resiliency of our forests and fields is diminished, then mankind is endangered. We only tamper with the health of our soils at our peril. By becoming closely attuned to the well-being of soils, man gains some predictive control over his future. We must be sure that when the ground gasps, we at least hear. Better yet, we hear and be able to react in order to assure the greatest well-being of man."

There was applause and the speaker sat down. He was hopeful that some had truly heard what he said; he



The land breathes, as does a living organism, and when it gasps we had better hear.

was doubtful. None of the audience had dozed but his message was one that would not likely, make the press, was bigger than most cared to wrestle with after a day at the office, and was hardly the stuff of fame and fortune. He shook hands as some of the audience stopped by for the polite remarks; enjoyed some of the flattery, but was bothered by a man standing back, waiting.

After the last group thinned the young man stepped forward aggressively, introduced himself as a state wildlife biologist, and asked for an appointment. The professor suggested coffee *then* and the two went out. One was delighted that someone was interested in the ideas, the other delighted to find someone who was really interested in selling his ideas and "getting with it."

The biologist jumped at the chance as they were seated. "You said that this technique of measuring the health of soils has been known for a long time."

"Yes, at least since 1900."

"Why hasn't it been used before?"

The professor answered, "As is the case in science, the need was not so evident; the application not so apparent. Now we have many people, fantastic new land uses, powerful insults to the environment. Often we don't even know how to measure their effect. This is one way."

By R. H. GILES, Jr. and A. DAMALAS
Division of Forestry and Wildlife Sciences, VPI & SU, Blacksburg

The biologist said, "I think I see the technique but I'm struggling to see how it might work on state wildlife lands or in areas of my responsibility. I take soil samples, put them in a cooler, take them to the laboratory, and measure the amount of carbon dioxide given off."

"Right. There are no differences between that gas which you breathe out, the gas in soft drinks, and the gas "exhaled" by the soil. Instead of one person breathing out, there are millions of microscopic organisms living in the soil, especially bacteria, actinomycetes and fungi as microflora and also, nematodes, protozoa and notifers as microfauna that are using oxygen and giving off carbon dioxide."

"O.K., this measurement of gas is an index of the organisms; the more gas, the more organisms," said the biologist, but still with a quizzical look on his face.

"Correct. What seems to be bothering you?"

"I don't see clearly how this relates to your speech on 'ecosystem dynamics', how this index is also an index to the changes that take place in wildlife habitat."

"It's easy after you run through it once. The leaves fall; they decay or decompose, largely as a result of bacteria and organisms. As they decay, the substances bound up by them, like carbon, hydrogen, oxygen, sulfur, nitrogen, phosphorus, potassium, magnesium, calcium, are changed to a form that they can be taken up again by plants. The organisms in the soil are the middle men; they unlock the stored resources for use by the plants and animals that will consume them. If this process is slowed down, then plants do not grow as well, less wood is added, the whole system slows down."

"Then the carbon dioxide measurements are a measure of the rate of the cycling and recycling of elements in a plant community?"

"Exactly. Now you see that by these measurements of the breathing rate of a forest, a tundra, or a field we can explain what has happened in the past, establish the present rate, and predict a little of the future." (more)

 (Continued from page 19)

"And you said in the speech that it seems possible to measure the changes in the community that result from pollution. I'm very interested in the mercury pollution problem. As I see it, the situation we now have is that mercury is toxic to plant and animal tissues. It is potentially hazardous and is becoming an increasing part of man's environment. One probable way that mercury and its associated hazards increase is through the burning of fossil fuels, especially coal and oil. Coal and oil are known to contain much mercury. This could mean that the 520 million tons of coal consumed annually results in 500,000 pounds of mercury vapor released to the environment. Most but not all of the mercury from fuel burning power plants and industries escapes into the atmosphere with the stack gas.

"How long mercury stays in the atmosphere is not known, but much of this mercury is washed from the atmosphere and deposited onto the soil. After hearing your speech, I began to wonder if the measurement of carbon dioxide could be applied to the mercury pollution problem."

"I think so; we're doing studies on that now. We think it can also be used to monitor and study the effects of many treatments or environmental disturbances to ecosystems."

"A measure of carbon dioxide would give us quick means to judge the condition of an ecosystem."

"Yes it will, but be careful. It will be useful like a stethoscope used by a doctor. It surely won't tell all the answers; it will give some pretty useful first indicators. It will be dangerous to take one measurement and make too much of it. For example, we now know that carbon dioxide varies seasonally. The more plant materials and the deeper the soil, the greater will be the carbon dioxide. It increases with increasing soil moisture, increasing air and soil temperature, as well as increasing activity of microbes in the soil. Soils which retain moisture in winter and late spring have high carbon dioxide levels. A given soil, though, containing more decomposable organic matter may have higher carbon dioxide levels in summer than in winter. This is true because on warm summer days the microbiological activity increases, releasing carbon dioxide."

"The evening has been most exciting," said the biologist. "Not only have I learned more about ecosystem, but I think I have a technique for better monitoring the work we're doing and being more sure that we don't cause unintended harm to the land. I'm particularly glad we have a technique for keeping an account of changes in the forests and green areas that may be caused by air, pesticide, herbicide, lead, mercury, or other contaminants of our environment. Your words at the end of the speech were quite well made: By measuring the breathing rate of the land we can tell when the last gasps may occur—both for the land and man."

ADVICE TO DUCK HUNTERS

HOUSTON Astros Manager Harry Walker suffered chilly goose bumps in Alabama's Little Cahaba River to help the American Red Cross prove a point—it's not necessary to drown while duck hunting.

Falling into deep water fully clothed need not end in tragedy. Walker said he had heard many stories about hunters falling into the water and being dragged to their deaths by their waders. But waders can actually keep a hunter afloat.

Birmingham News photo by J. Ayres

If you fall in, don't panic. Use the air trapped in clothes and waders to keep yourself afloat.

"Most people think clothes weigh you down in the water," said Charles Russell, Red Cross national director of Safety Programs. "But they don't. They trap air, and if you don't lose the air by thrashing around, you can float."

Walker found that by pulling his knees to his chest, the rubber boots—taut with air—kept him afloat.

The first rule after falling overboard is to do nothing for a few seconds, Russell explained. "Just relax and let the air in your clothes bring you to the surface. Once you're floating, you can start to paddle your way back to the boat or safety."

"In most cases, small boats don't sink when filled with water, but float at the surface," Russell explained. "The important thing to remember is that if you fall in the water clothed, you don't have to pull your outer garments off or drown. Your clothes not only can help you stay afloat by trapping air, but they also can protect you from overexposure in cold water."

Russell cautioned against wearing an ammunition vest while hunting from a boat and against stuffing pockets with ammunition, since the extra weight could drag a hunter under water.

Air in the clothing will eventually be displaced by the water, but some of the air can be replaced. One way is to lie face down in the water, partially unzip the jacket, and slap quantities of water and air into the jacket. The air bubbles will rise toward the water surface and become trapped in the back of the jacket. This will give new additional support.

Computer Games Students Play

COMPUTER games are providing some real life experiences for fisheries and wildlife students at Virginia Tech.

"Trout" and "Salmon" are two of the games people are playing at the Division of Forestry and Wildlife's computer terminal which ties into Tech's main computer.

Acting as manager for a day, a student devises a plan for a simulated version of an actual fishery in when he manages "Trout." In a matter of minutes, he gets feedback from his management decisions and computer comments on how well he has done the job.

The Department of Fisheries and Wildlife Science has access to about 10 such computer games which can be sent to other universities and colleges, which also use the program's learning tools.

Judging from the number of people who have played "Trout" since it was first available in April, Robert T. Lackey, assistant professor of fisheries science, estimates about 300 students, faculty, and others attending short courses given by the department will use it in the next year.

The program is supplemented by classroom discussions and seminars to give students the necessary background for their decisions.

"The computer's analysis does not give any secret answers to tell students what they should have done," Lackey said. It merely appraises them of the impact of the decisions they have made," he explained.

A new water resources game, "Dam," is underway on a grant provided by the Water Resources Research Center to develop a computer-implemented exercise illustrating the principles and complexities of managing a multi-use reservoir.

"Dam" includes five different roles relating to managing the reservoir system: the head of a cooperative county planning commission, the mayor of a city, a recreation specialist, a fisheries manager, and a power company executive.

Franklin B. Titlow of Christiansburg, a graduate student, is developing the reservoir game.

"It will be up to the five players to work together to most efficiently manage the reservoir system. Each participant will make decisions and the computer will analyze the results of these individual decisions and print out the combined impact of management on the system," Titlow said.

"These games provide a source of experience in management by developing effective decision makers," Lackey said. "Teaching natural resource management is difficult in that most experience in decision-making is unavailable to the student until he seeks his first job."

He explained that learning exercises have been used extensively in business and the military, but application of these tools to natural resource education has been minimal.

A Virginia Tech student studies the computer's evaluation of the management decisions he has made in the computer game, "Trout." Immediate feedback is one of the pluses of using computer games as learning tools.

Know Your BIOLOGISTS

Text and Photos by F. N. SATTERLEE
Information Officer

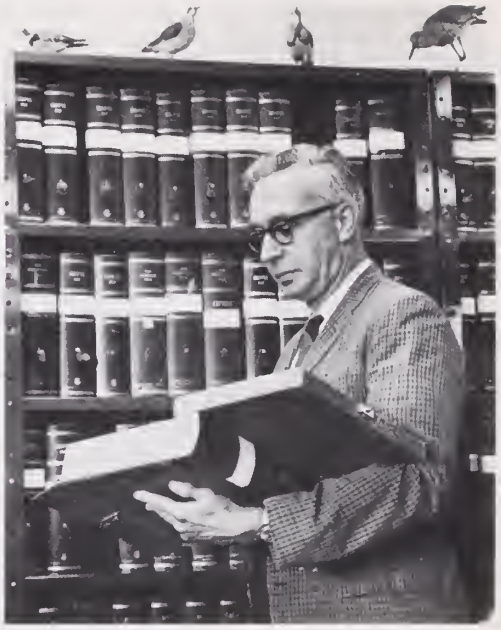
CHARLES H. PERRY
Supervising Game Biologist

Charlie Perry was born in Bluefield, West Virginia, but grew up on a 350-acre farm near Tazewell, Va. Following graduation from Tazewell High School he attended Kentucky Military Institute and in the fall of 1940 entered Virginia Polytechnic Institute with the intention of becoming an aeronautical engineer. However, influenced by his uncle, a professor in the school's agriculture department, Charlie changed his mind and switched to a major in the field of Forestry and Wildlife.

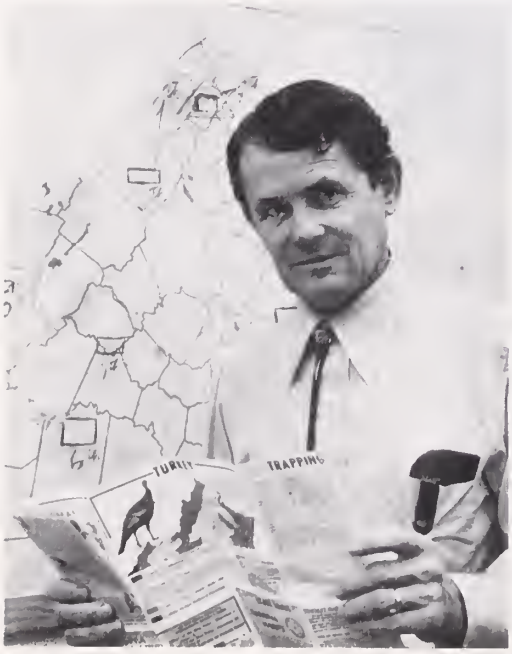
In April of 1943 he went on active duty with the U. S. Army. Following graduation from OCS, and just prior to going overseas to Europe with the 3rd Army, he married his high school sweetheart, Jane. At the end of the war he returned to V.P.I. where he earned a BS in 1947 and his MS in 1948.

In July of that year he joined the Virginia Game Commission as a District Game Biologist assigned to the Tazewell area in SW Virginia. Charlie is currently a Game Biologist Supervisor with responsibility for two districts (21 counties), the Jefferson Forest, and three cooperative Wildlife Management Areas—Clinch Mountain, Hidden Valley and Havens.

He and Mrs. Perry make their home in Tazewell.



JOE L. COGGIN
Game Biologist Supervisor

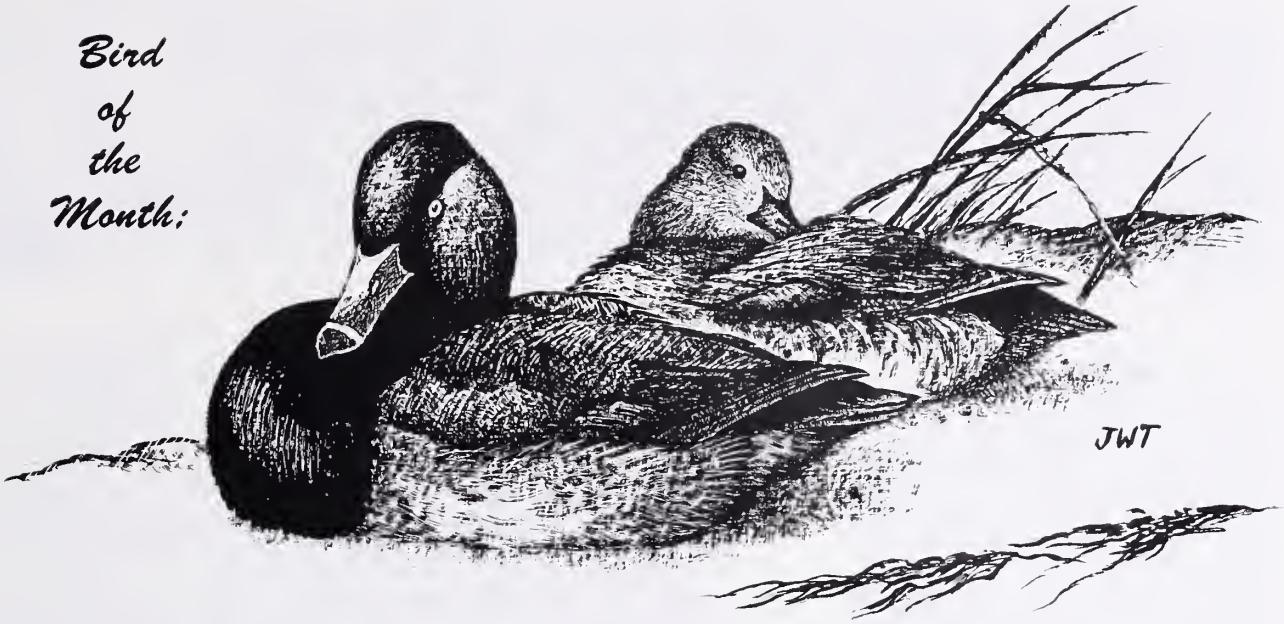


Joe Coggin was born in Janesville, California. His father was a Baptist minister and when Joe was four years of age the family moved to North Carolina. Just as Joe graduated from Wingate, N. C., High School, the family moved to Meadows of Dan, Virginia. This was during WW II and Joe enlisted in the U. S. Navy serving for four years, most of which were spent in the Caribbean and Pacific Theaters.

Following the war he attended Wake Forest College in North Carolina, graduated with a B.S. in social sciences and in business administration, and accepted a job as a draftsman with a steel construction company in Roanoke. He entered Virginia Polytechnic Institute in the Forestry and Wildlife Program, and in 1954 he received a MS in that field. During July of that same year he began employment with the Education Division of the Virginia Game Commission. Later he was assigned to the Game Division and full-time work in biological research. Currently Joe is a Supervising Research Biologist, responsible for the areas west of the Blue Ridge in the state.

He and Mrs. Coggin, the former Hazel DeHart of Meadows of Dan, Virginia, and their three children live on a rural route near Eagle Rock, Virginia.

Bird of the Month:



Redhead

By JOHN W. TAYLOR
Edgewater, Maryland

THE decline of the redhead has been more serious, more rapid than that of any of our waterfowl, especially along the Chesapeake. Two decades ago, they rafted by the hundreds in many of the Bay's tidal estuaries, and thousands concentrated in favored areas. Today, flocks of any size are rare, and they occur regularly in but few of their former haunts.

This tragedy has not received the notice which attended a similar decrease in the canvasback. The redhead is not as prized by the hunter or the epicurean, chiefly because of its smaller size (it averages about one-half pound lighter than the canvasback). Consequently, bag and limit restrictions have not been felt as keenly, nor has their absence been so conspicuous.

Yet many who know the redhead consider it on a par with its better known congener. Gastronomically, it is equal if not superior to the larger bird. It never acquires the fishy taste sometimes present in the flesh of the canvasback, since it is nearly 100% vegetarian. Its flight, though perhaps lacking in strength and force, is faster and more agile. Certainly the redhead has the edge when it comes to looks; it is the more intensely colored of the two. When the sun strikes full on a raft of redheads, the glistening chestnut heads and blue bills of the drakes produce a dazzling picture.

The two species are similar in pattern: reddish-brown heads, black chests and light bodies becoming darker towards the rear. The redhead is shorter and darker bodied and has a round, puffy head in contrast to the sloping profile of the can. The stubbier blue bill of the redhead is marked with a light ring and a dark tip; the can's bill is uniformly dark. This bill characteristic helps identify the hen redhead, along with her shape and darker overall color.

The former abundance of the redhead is dramatically illustrated by early accounts of its numbers on the Potomac. In a catalog of birds of the Washington, D.C., region, published in 1883, they are listed as "abundant in winter. One of the commonest ducks found in the city market, and passing about half the time for canvasback . . ." One of the local names given (in this catalog) for the redhead was "Washington canvasback."

The demise of the redhead can be traced primarily to the destruction of habitat in the prairie provinces of Canada, the core of its nesting range. Add to this an exceptional vulnerability to human interference, not only on the breeding grounds, but also on wintering territory. Overkill by hunting cannot be dismissed as a factor; until recent years they were subjected to the heaviest hunting pressure of any species (as has been shown by banding returns). Hopefully, the present closed season will help bring a silver lining to the clouds which now cloud the redhead's future.

Edited by HARRY GILLAM

New Quad Maps Available to Outdoorsmen

This year for the first time, outdoorsmen can obtain 7-½ minute Quadrangle or contour maps at a scale of 1:24,000 (one inch equals 2,000 feet) for the entire state of Virginia, the State Division of Mineral Resources reports. Mapping for the series began in 1962, and some of the new maps for portions of the state have been available for several years. These topographic maps give a picture of the terrain by means of colors and symbols with clearings, wooded areas, houses, barns, bridges, streams and ponds shown as well as roads and trails. One map will generally show more area than can be covered in a day's hunt.

Topographic maps are ideal for planning hunting expeditions in advance, saving hunting time and giving party members an advance feel for the terrain. Maps are also a good safety precaution since they can keep a hunter from getting lost or get him out of the woods if he should get turned round. With a little practice in reading contours, a hunter can estimate the height of a hill, the depth of each valley, and the slope and shape of the ground. Well planned hunting trips involving maps are generally more interesting and successful because each hunter knows exactly where he is going and where other party members should be. Maps are also handy for planning camping or hiking expeditions, float trips, or outings with family and friends.

The 1:24,000 scale maps are available at 75 cents each from the Virginia Division of Mineral Resources, Box 3667, Charlottesville, Va. 22903, or from the U.S. Geological Survey Distribution section, 1200 South Eads St., Arlington, Va. 22202. Virginia residents must include 4 cents sales tax. An index to the topograpic maps of Virginia may be obtained free from the Geological Survey office. Most local topographic map sales stores in larger Virginia cities have the new maps in stock or on order.

Magnificent Rack

This handsome buck was bagged by Andrew M. Tirch of Woodbridge during the 1971 hunting season.

"How To" for Waterfowl Hunters

A new 200 page book, *The North American Waterfowler,* has the inside dope on setups and techniques for bagging waterfowl under a great variety of circumstances. It is profusely illustrated, including numerous sketches and photographs plus a set of four waterfowl prints by Les C. Kouba, world famous artist. A few chapter titles include blind location and construction, decoys and sets, calling, negotiating hunting leases, jump shooting, and many more. The author of the book is Paul S. Bernsen. Pre-publication copies may be reserved at $14.95 each from Superior Publishing Company, P.O. Box 1710, Seattle, Washington 98111.

Game Law Digest Mistake Clarified

King and Queen and Louisa Counties will be open for spring gobbler hunting April 14-May 12, 1973, in spite of the fact that the current "Summary of Virginia Game Laws" states that they will be closed. The error came from a proposed change which was not approved. Although it will not affect hunters this fall, some may retain this erroneous information and miss out on hunting in the spring.

Wildlife Foundation Elects New President

E. Floyd Yates, of Powhatan and immediate Past Chairman of the Commission of Game and Inland Fisheries, was elected President of the Virginia Wildlife Foundation at the organization's annual meeting held recently in Spotsylvania County. Mr. Yates has been an active public servant his entire life, serving in many capacities both public and private. His reputation as a conservationist is known nationwide.

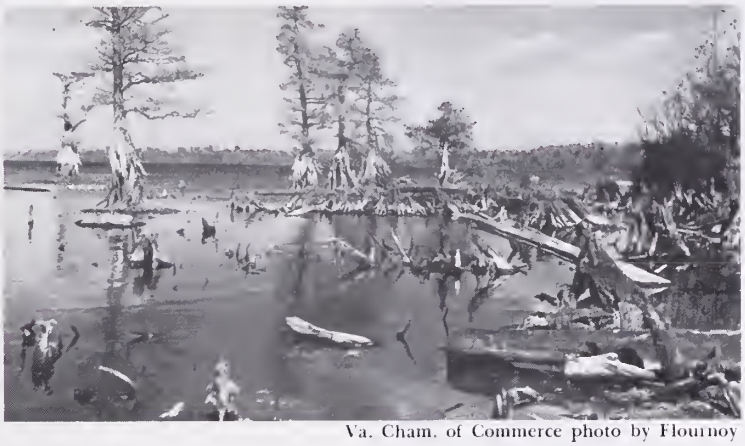
Mr. Yates succeeds Dr. William Pennington of Buckingham County, the organization's founding president.

The Virginia Wildlife Foundation's interest is to provide funds for conservation education. The organization's membership is made up exclusively of past presidents of the Virginia Wildlife Federation, which is the Foundation's primary source of income.

The Foundation, which funds needy conservation education programs, is interested in information regarding programs of this type, reports President Yates.

Edited by ANN PILCHER

The Great Dismal: A Natural Landmark



Va. Cham. of Commerce photo by Flournoy

An important feature of the Landmark is 3,100 acre Lake Drummond, around which remains a remnant of the majestic cypress stand that once dominated the swamp. The lake bottom is white sand, but much of the swamp floor is peat which has been sounded to depths of 11 feet and radio-carbon dated to more than 8,000 years. It is still forming today.

Secretary of the Interior Rogers C. B. Morton announced in July his approval of five new Natural Landmarks for inclusion in the National Registry of Natural Landmarks, and the designation of five notable "outdoor classroom" areas as National Environmental Education Landmarks.

Southeastern Virginia's Great Dismal Swamp is one of the five new Natural Landmarks. The 43,200 acre landmark area (about 20 miles southwest of Norfolk, Virginia) was part of the original Great Dismal Swamp which at one time may have covered more than 2,200 square miles in Virginia and North Carolina. After 300 years of human use, much of the original swamp forest has been replaced by second-growth forest. The area is rich in animal life including many species, such as the cottonmouth moccasin, canebreak rattler, chameleon, yellow-bellied turtle, cotton mouse, marsh rabbit, and Florida grackle, that reach their northern geographic limits in the Great Dismal Swamp. Eighty species of breeding birds have been identified here.

Nearest of the five "outdoor classrooms" is the Conservation and Environmental Studies Center of Browns Mills, New Jersey. The 67-acre site includes access to 13,000 acres of Lebanon State Forest. It is the center of the noted Pine Barrens and the location of an old blueberry and cranberry farm with an outstanding water supply available. Operated by the Center, a wide variety of educational activities are conducted, including overnight stays for students, teacher training, curriculum study guides, and assistance to schools in developing environmental education programs.

Promotional Comic Features Earth

"The EARTH, Our Home in Space" is the title of the latest educational cartoon booklet developed by the Soil Conservation Society of America.

Each of the Society's eight 16-page, color newsprint Better Environment Series booklets is prepared under the supervision of a special committee and conveys accurate, factual information about natural resource allocation and use. Although designed primarily for 5th and 6th grade age groups, these promotional comics ("promics," as they are sometimes called) are popular with young and old alike.

The EARTH booklet traces the history of our planet from its beginning to the present, and then seeks to examine in more detailed fashion the forces of nature and man which have brought our planet to its present state. Man's use of the earth's resources is also discussed, as are the accompanying problems of pollution, energy shortages, etc.

A sample copy of the booklet may be ordered from Soil Conservation Society of America, 7515 Northeast Ankeny Rd., Ankeny, Iowa 50021. Enclose 25¢ for cost of handling.

Fishing Rodeo: Source of Summer Fun

On August 22 fifty Warren County 4-H'ers gathered at the Robert L. Leach Pond east of Front Royal to participate in a fishing Rodeo sponsored by the Cooperative Extension Service (under the direction of Miss Kay Webb, local Extension Agent) and the Lord Fairfax Soil and Water Conservation District. Virginia game wardens and representatives of the U. S. Soil Conservation Service assisted the sponsors with instruction and demonstration. Purpose: to teach conservation, pond management, and pond safety. Following the rodeo a covered dish supper, campfire program, and candlelighting ceremony were enjoyed by the young anglers, their parents and friends.

Robert L. Leach Pond east of Front Royal: scene of late summer fishing rodeo.

Edited by JIM KERRICK

Photo courtesy Evinrude Motors

The fairer sex can assist the captain with many boating chores, such as guiding the skipper when launching the boat.

Woman's Revolt Hits Boating

It's finally happened!

Those days of telling your wife or girl friend you were going to spend the day fishing offshore with the guys are over. The little lady has left the home and has taken over as first mate.

It used to be she didn't like the idea of going boating. "It makes me seasick; you go," she would moan. After a while, you really were glad she wasn't along. Lo and behold, all of a sudden, she doesn't need any dramamine anymore and is an expert sailor.

The women's liberation movement has invaded boating! Of course, her role today isn't the galley slave of yesterday. Just like her new expanded responsibilities in the office, she has new status onboard.

And probably surprising to many greybeards, the fairer sex is doing a better job than many of her male counterparts. In some areas, like physical strength, she may be lacking. But, in others, she is uncanny in her abilities.

Women are excelling in male-related roles of piloting, navigation and racing, as well as galley captain. She can now speak the language of the water, knows the rules of the road, can plot and read waterway charts, and tie good knots. Indispensable in the home, she's becoming a necessity aboard.

Since she's no longer confined down in the galley where she sweated for years over a hot kerosene stove, her new responsibilities are varied. Maybe it's women's intuition or maybe the potential was always there, but man is moving over and making room for her.

Take the weather, for instance. Women have an instinct for it. You can't explain it, they just do. When she says, "It's going to rain," and her skipper counters with, "Oh, how do you know? There's not a cloud in the sky." "It just is," is usually followed by a shower.

She has easily assumed the natural role of ship's hostess. As officer of protocol, it's her duty to suggest to guests what to wear, insuring life-jackets are provided, finding out if they can swim, and assigning them lockers. Usually the captain is too busy tinkering with the sparkplugs to remember to do this.

Men have a tendency to lose things and women don't. It's a fact. The female species is very good at keeping an inventory.

It took them awhile, but women finally learned a boat is nowhere to show off their wardrobes. It was a struggle, but they finally gave in to common sense. Now, it's hard to find out where the waist is, and the hips have disappeared. It's "wear clothes as old as you can find."

The captain has also given the chore of ordering charts and keeping track of them to the first mate. She has demonstrated the talent of doing it better than her hubby. She is also a wonder at getting the right flags for the right times and even has put together some colorful displays on the masts for dressing a ship.

She has done everything well. Before, it was a bitter triangle: you, your wife and your boat. Now, she's enjoying a love affair you have had all these years. She pays attention to everything she is told. She only has to be told once.

She's a picture of total concentration when doing her job. She has mastered your seas, but don't worry; she'll never take over as skipper. She doesn't want to move you out. All she ever wanted was to live side by side with you.

You've got to admit, it's a pretty good life.

REMEMBER

ALL VESSELS PROPELLED BY MACHINERY, TO INCLUDE ELECTRIC MOTORS, MUST BE REGISTERED TO OPERATE ON VIRGINIA WATERS

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